

REPORT OF SECRETARY OF DEFENSE

DONALD H. RUMSFELD

TO THE CONGRESS

ON THE

FY 1978 BUDGET, FY 1979 AUTHORIZATION REQUEST
AND FY 1978-1982 DEFENSE PROGRAMS

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IX. STRATEGIC NUCLEAR FORCES

The first task in U.S. force planning is the design of the U.S. strategic nuclear posture. At this time and for the foreseeable future, only strategic nuclear forces, particularly those of the Soviet Union, can directly threaten the safety and the survival of the United States itself.

TABLE IX-1

U.S. AND USSR STRATEGIC FORCE LEVELS

	END FY 1976		END FY 1977	
	U.S.	USSR	U.S.	USSR
OFFENSIVE				
ICBM LAUNCHERS				
OPERATIONAL 12/	1054	1650	1054	1450
OTHERS	0	0	0	0
SILM LAUNCHERS				
OPERATIONAL 13/	656	800	656	800
OTHERS	0	0	0	0
LONG-RANGE BOMBERS 5/				
OPERATIONAL 3/	419		419	
OTHERS 3/	194		194 2/	
FORCE LOADINGS 13/				
WEAPONS				
DEFENSIVE 9/				
AIR DEFENSE				
SURVEILLANCE RADARS	58		58	
INTERCEPTORS 10/	415	2555	341	7647
SAM LAUNCHERS 11/				
ABM DEFENSE				
LAUNCHERS		64		64

1/ Includes on-line missile launchers as well as those in the final stages of construction, in overhaul, repair, expansion and modernization.

2/ Does not include test and training launchers, but, for the USSR, does include launchers at test ranges which are probably part of the operational force.

3/ Includes launchers on all nuclear-powered submarines and, for the Soviets, operational launchers for modern SILMs on G Class diesel submarines.

4/ The following long-range bombers are placed in this category: for the U.S.: B-52, FB-111 and B-1; for the USSR: Bear, Bison, Backler. FB-111 does not fit the SALT definition of strategic nuclear delivery vehicle.

5/ Includes deployed, cruise-configured, aircraft only.

6/ For the U.S., includes bombers for ROT&E and in reserve, mothballed and storage. For the USSR, includes all variants of Bear, Bison and Backler (launchers, AEW, trainers, reconnaissance, etc.) wherever located.

7/ Represents the maximum number of aircraft assuming no cancellations.

8/ Total force loadings reflect only those independently-assignable weapons associated with on-line ICBM/SILM and UE assets. Weapons reserved for reserve and weapons in inactive status are not included.

9/ Excludes radars and launchers at test sites or outside CONUS.

10/ These numbers represent Total Active Inventory (TAI).

11/ These launchers accommodate about 12,000 SAM interceptors. Some of the launchers have multiple rails.

A. Their Functions

The U.S. strategic nuclear posture deters such attacks. But that is not its only function. Although both Great Britain and France maintain modest nuclear forces, only the strategic capabilities of the United States stand as a major bulwark against nuclear blackmail of and attacks on our allies.

It is fashionable, I realize, to assert that if only the two super-powers, and especially the United States, would set a good example and engage seriously in nuclear disarmament, other countries would be less tempted to acquire nuclear capabilities of their own. But this assertion is almost surely without foundation in fact. The motives of states which

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aspire to nuclear status are invariably complex. It hardly seems plausible to believe that any significant reductions in U.S. nuclear forces, and the subsequent decrease in their nuclear protection for other countries, would discourage nuclear proliferation. Strong U.S. nuclear forces may not be a sufficient condition for nuclear restraint on the part of others, but they appear to be a necessary condition. Indeed, they may have a role to play in discouraging rash action by nations which acquire small nuclear forces. In this connection, only six nations have tested nuclear weapons at this time, But there may already be as many as 20 nuclear aspirants, and the number could well rise to 40 by 1985.

An equally important function for the strategic nuclear forces is to provide the foundation on which U.S. and allied general purpose forces gain credibility. Consequently, even though they absorb no more than 20 percent of the total U.S. defense budget (when a share of indirect support costs is added), they require the most serious, continuing attention.

If the U.S. strategic foundation is not solid at all times, the rest of the defense structure we build -- and our entire system of collective security -- may collapse. If we fail to maintain a modernized strategic posture, the Soviets (who seize every occasion to modernize and improve their own) will certainly see the opportunities presented to them. They are already behaving in a manner which indicates their interest in more than deterrence as some have defined it in the West. We must expect them to continue in this vein. As the Central Intelligence Agency has pointed out:

The Soviets are committed to the acquisition of "war-fighting capabilities," a decision which reflects a consensus on the need to assure the survival of the Soviet Union as a national entity in case deterrence fails. It also accords with a long-standing tenet of Soviet military doctrine that a nuclear war could be fought and won, and that counterforce capabilities should be emphasized in strategic forces. Mutual assured destruction as a desirable and lasting basis for a stable strategic nuclear relationship between superpowers has never been accepted in the USSR. But Soviet political and military leaders probably regard it as a reality which will be operative at least over the next decade.*

3. The Threat

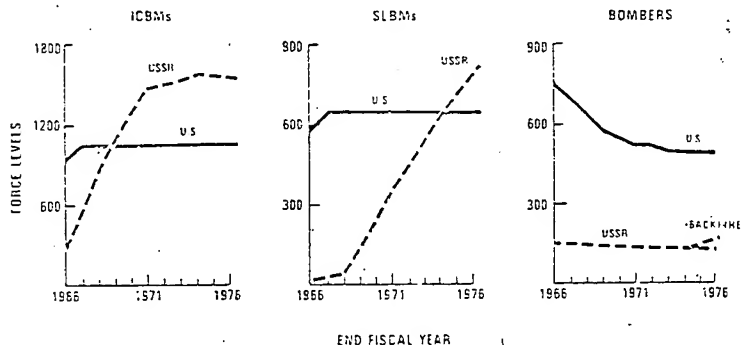
While this judgment may seem harsh, even unseemly in a period of negotiations, and contrary to much conventional wisdom, it is supported by a great many facts. To be sure, the Soviets started well behind the

* Hearings before the Subcommittee on Priorities and Economy in Government, Joint Economic Committee, Congress of the United States, Part 2, May 24 and June 15, 1976, p. 68.

United States in strategic capabilities, and with a much weaker technology and industrial base. For many years, therefore, it was possible to rationalize Soviet programs largely as reactions to earlier U.S. initiatives. Now, however, the situation has quite a different appearance. Between 1965 and 1976 alone, the Soviets managed to increase their ICBM force from 224 to over 1,500 launchers, and their SLBM force from 29 to around 800 launchers. They also began to modernize their long-range bomber force.

CHART IX-1

CHANGES IN U.S./U.S.S.R. STRATEGIC FORCE LEVELS



As their offensive capability has increased, so has their inventory of deliverable weapons. Their strategic loadings (weapons which can be loaded on board strategic missiles and bombers) rose from 450 to about 3,300 warheads and bombs between 1965 and 1976, and there is every indication that the growth in deliverable weapons will continue at a rapid pace.

1. Current Deployments

In 1977, we already face a mature and sophisticated Soviet strategic nuclear capability. At the present time, the Soviets deploy [redacted] than 1,500 ICBMs, over 800 SLBMs, and over 200 long-range bombers, including those Backfire aircraft assigned to naval aviation and other aircraft rapidly convertible from tankers to bombers. They appear to believe, as we certainly do, that a diverse offensive force mix is important insurance to have and that investing in only one basing mode for missiles would

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entail an unacceptable risk. However, to date, they have placed less emphasis on long-range bombers than we do.

As far as we can tell, the Soviets are building to the limits on missile launchers set by the Interim Offensive Agreement of 1972, with a deployment mix of about 1,400 ICBMs and 950 SLBMs. As their SLBM force has expanded well over the threshold of 740 launchers, they have been deactivating older SS-7 and SS-8 ICBM launchers.

[REDACTED]

It has been estimated that the Soviets could deploy as many as [REDACTED] launchers and bombers [REDACTED] by 1985 if they were not constrained by existing and proposed SALT agreements.

[REDACTED]

Soviet active strategic defenses remain about as they were reported a year ago. The Moscow ABM system consists of 64 launchers. Anti-bomber defenses are composed of about [REDACTED] surface-to-air (SAM) launchers and 2,600 PVO interceptors. Soviet command-control-communications (C³) for both strategic offense and defense have been given increased sophistication and redundancy during the past year, and they appear to have the capacity to execute a flexible, war-fighting strategy. During the past year, we have gained a better appreciation of the extent of the ongoing Soviet civil defense effort. The program, which is under military direction, provides varying degrees of protection for leaders, the general population, and industry.

2. Force Improvements

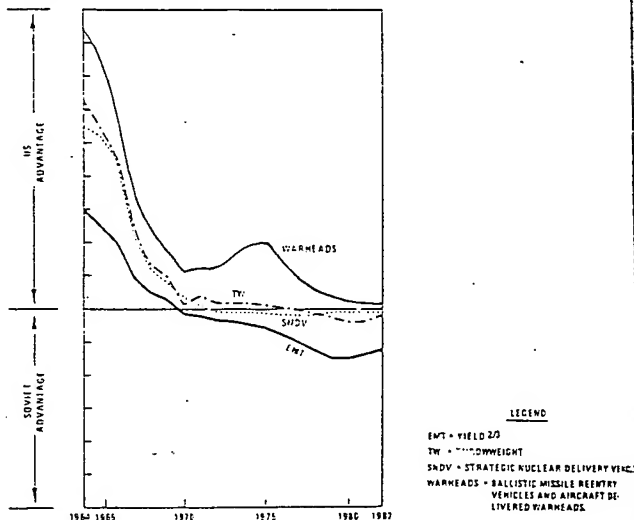
The overall Soviet strategic posture is already impressive in terms of numbers, throw-weight, and equivalent megatonnage. Even more impressive is the generally successful effort to improve the quality of the posture within the limits of various SALT agreements and understandings. In short, we are witnessing a significant upgrading of Soviet war-fighting capability in the current wave of modernization. A further wave, expected to follow this one by the end of the decade, could increase that capability still further.

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CHART IX-2

US/USSR STRATEGIC FORCES ADVANTAGE



a. Intercontinental Ballistic Missiles (ICBMs)

The most striking evidence of the qualitative improvements arising out of the current wave of modernization comes from the Soviet ICBM force. The new SS-17, SS-18, and SS-19 missiles continue to be deployed in modified and upgraded silos at a rate of about [REDACTED]. We estimate that there are now about 40 SS-17s, [REDACTED] SS-18s, and around 140 SS-19s in the force. We believe that some of the modified silos have been hardened to resist at least [REDACTED] pounds per square inch over-pressure.

[REDACTED] In addition to a MIRV configuration, the Soviets have developed high-yield, single warheads for the SS-17, the SS-18, and the SS-19. The SS-18 is currently being deployed in both single and MIRVed warhead modes.

When configured in its MIRVed mode, the SS-17 has 4 MIRVs [REDACTED]. The SS-19 can carry 6 MIRVs [REDACTED]. We now believe that the SS-18 can deploy as many as 8-10 MIRVs [REDACTED].

[REDACTED]

We believe that the Soviets could deploy the SS-X-16 ICBM in a land-mobile mode as a successor or supplement to the SS-13. The payload of the SS-X-16 will probably consist of a single warhead. [REDACTED] As reported, a shorter-range version of the SS-X-16 ICBM system, the SS-X-20, is [REDACTED] to be deployed [REDACTED] as a replacement for the older SS-4 and SS-5 MRBMs and IRBMs. The SS-X-20 consists of the first two stages of the SS-X-16, has a demonstrated range of at least [REDACTED] nautical miles, and carries three MIRVs [REDACTED]. As far as we can now judge, the planned deployment of MIRVed SS-X-20 missiles could give the Soviets almost three times as many warheads as did the older MRBMs and IRBMs. There is also the possibility that the missile could be given a range equal to the SALT definition of ICBM range (5,500 kilometers or about 3,000 nautical miles) either by the addition of a third stage or by offloading MIRVs.

Even as these deployments and developments go forward, still [REDACTED] ICBMs proceeds in research and development. We do not yet know the specific characteristics of these new missiles. But we anticipate that they will show still further improvements in accuracy and thus in hard-target kill capability. Testing of one or more of these missiles will probably begin later this year.

b. Submarine-launched Ballistic Missiles (SLBMs)

The Soviets have continued to modernize their SLBM force and are producing a significant improvement in the sea-based component of their triad. Submarines are becoming only slightly quieter, but missile ranges are growing longer, and MIRVs are being developed for SLBMs. The Soviets have ended production of the Yankee class submarines in part, no doubt, because the boats would have to go on station within range of U.S. and allied ASW forces in order to cover targets in the United States.

The Delta I submarine, [REDACTED] carries 12 SS-N-8 missiles, each with a range of at least 4,200 nautical miles.

[REDACTED]

The SS-N-6, Mod III, aboard the

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Yankee submarines has [redacted] multiple re-entry vehicles (MRVs). The SS-N-8 missile currently has one warhead, [redacted]. The present generation of SLBMs does not have a significant hard-target kill capability. But it is sufficiently accurate for use against bomber bases and other soft targets of high value. The SS-N-8 has the further advantage that it can cover major targets in the United States from launch-points as distant as the Barents Sea and the North Pacific. Such deployments, relatively close to home ports, allow more time on station (the equivalent of having additional SSBNs) and provide a degree of sanctuary from anti-submarine warfare (ASW) forces.

It should be emphasized that the SS-N-8 is about comparable in range to the full-payload range Trident I missile we plan to deploy in 1979. By that time, the Soviets may have begun deploying a submarine even larger than any of the Delta series. They have already tested two new SLBMs. One, the SS-NX-17, is a solid fuel missile with a large post-boost vehicle (PBV) and a single warhead. The other, designated the SS-NX-18 is a liquid fuel missile which, to date, has flown with two MIRVs.

[redacted]

c. Long-range Bombers

The most significant change in the Soviet long-range bomber force has been the addition of the Backfire to the older Bisons and Bears. The Backfire has now been in service with Soviet Long-Range Aviation for about 30 months. [redacted] total production (including aircraft for Naval Aviation) is currently running at a rate of about [redacted] a month. We continue to believe the Backfire has an intercontinental capability given certain flight profiles. Use of its inflight refueling capability would assure intercontinental ranges, and its performance is likely to be improved with time. [redacted] the Soviets [redacted] also working on a follow-on heavy bomber with greater range and payload to replace the aging Bears and Bisons.

d. Active Defenses

The Soviets have not yet remedied their vulnerability to relatively slow bombers penetrating their air defenses at low altitudes. However, they continue efforts to plug this gap, and they are expected to develop an AWACS-type aircraft and a look-down, shoot-down capability [redacted] in the 1980s.

[redacted]

[REDACTED]

In theorizing about strategic nuclear stability, some analysts have postulated that mutual vulnerability is a condition of stability -- in other words, if each side offered its vulnerable population and industry as hostages to the other, neither side would dare to attack. These same analysts saw acceptance by the Soviets of this premise in their signature of the ABM Treaty of 1972. It has become equally plausible to believe that the Soviets have never really agreed to this assumption, and that they entered the ABM Treaty either because of severe resource constraints or because they feared that, without an agreement, U.S. technology over the near term would give us a continuing and even growing advantage in this form of defense.

e. Passive Defenses

This hypothesis gains in plausibility when the spectrum of Soviet active and passive defense programs is considered. While U.S. R&D on ABM systems has slowed down, theirs has not. In the realm of civil defense, there were significant shifts in program emphasis in the late 1960s and early 1970s. The current Soviet civil defense program is broad in scope with preparations suggesting the following order of priority;

-- Assuring continuity of government and control by protecting the political and military leadership;

-- Providing for the continuity of important economic operations by hardening facilities, protecting personnel, protecting some food supplies, and other measures; and

-- Protecting nonessential personnel through sheltering or evacuation.

Available evidence suggests that all of these preparations are continuing and that the Soviets are following the above priorities. While the evidence is still coming in, and we cannot make firm judgments on either the magnitude or potential effectiveness of Soviet civil defense, the available information suggests a strong Soviet interest in damage limiting.

3. Conclusions

Two points should be made about these developments in Soviet offensive and defensive programs.

-- First, whatever the motives for past Soviet strategic expenditures, it should now be evident that the Soviets have taken the initiative in a wide range of programs, that restraint on our part (whatever its reason) has not been reciprocated -- and is not likely to be -- and that the behavior of the Soviets indicates an interest -- not in the more abstract and simplistic theories of deterrence -- but in developing their strategic nuclear posture into a serious war-fighting capability.

-- Second, while the Soviets may not persevere or succeed in this admittedly complex and difficult task, their growing capabilities must play a major role in U.S. force planning.

To underline this last point may seem trivial. But some believe that U.S. strategic nuclear forces are already insensitive to whatever the Soviets do with their offense and defense. In my judgment, few ideas could be more dangerous to the security of the United States or further from the actuality of the strategic situation. As Albert Wohlstetter wrote nearly twenty years ago, the balance is delicate, and the task of strategic nuclear deterrence is continuing and demanding. Not only should the design of the U.S. strategic posture be highly responsive to the threat; it must also reflect a number of other factors including the specific and changing conditions of modern deterrence.

C. Second-Strike Forces

It has been a longstanding policy of the United States to recognize, first, the peculiar ability of strategic nuclear offensive forces to deliver devastating and even decisive attacks with little or no warning, and second, the advantage that an attacker would gain if he could destroy the U.S. strategic forces. Accordingly, a major condition of nuclear deterrence is the maintenance of second-strike retaliatory capabilities -- that is, forces which can reliably wait until an enemy has attacked before striking back.

The reasons for this caution are worth remembering. Nuclear strikes have such unprecedented implications that they must never result from an accident, an unauthorized act, a misunderstanding, or a hasty conclusion that if they are not used, they will be lost. Under law, it is the responsibility of the President to decide when and how to use the nuclear forces of the United States. It is the responsibility of the Department of Defense, not to force his hand, but to ensure as far as possible that he can make this decision with deliberation and with the confidence that he knows the circumstance of the nuclear attack.

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We take a number of measures to keep the probability of accidents and unauthorized acts extremely low. We also strive wherever possible to design U.S. forces so that, if necessary, they can actually absorb an enemy attack, rather than depend on warning for their survival, and strike back only after nuclear weapons have actually detonated. Until recently, ICBMs and SLBMs have been ideally suited to meet this design requirement: through a combination of mobility and concealment in the case of the SLBMs; through hardening in the case of the ICBMs. Since bombers are extremely soft and concentrated when on the ground, they cannot ride out an attack in the same way as ICBMs and SLBMs. We must keep some percentage of them in a high degree of alert, and depend on tactical warning to get the alert aircraft off their bases before incoming weapons arrive. Positive control measures then permit their recall after launch in the unlikely event that warning systems have given a false alarm, as is at least within the realm of possibility even with the advanced and complementary surveillance systems now available. In addition, we maintain the capability to keep a portion of the bomber force on continuous airborne alert if the need should arise.

The President can obviously commit any or all of these three forces to their missions with or without warning of an attack. But his option to avoid pre-emption or a "launch on warning" of ballistic missiles (which cannot be recalled) should be preserved by ensuring that he does not have to commit the forces until he is confident a nuclear attack is in fact under way. To design otherwise would be to undermine deterrence by creating unnecessary fears of a first-strike which, in turn, could lead to instability in a crisis and increased risks of a nuclear war.

D. The Triad

The most efficient way to preserve a responsive, controllable, retaliatory capability is by means of a mixed force of ICBMs, SLBMs and bombers -- namely the Triad. Maintenance of a second-strike Triad continues to be justifiable on a number of grounds. First, history shows that no system, however ingeniously designed, is ever entirely invulnerable for an indefinite period of time. For most measures, there tend to be countermeasures. And the countermeasures may show up with little advance warning, especially when one of the contestants operates in a closed society. Considering the fundamental importance of the tasks assigned to the U.S. strategic retaliatory forces, it is not unduly conservative to maintain three capabilities with differing characteristics, differing challenges to an opponent bent on countering them, and differing rates at which their vulnerability is likely to become critical. To take a less conservative approach is to risk precisely the instabilities which arise from claims of "bomber gaps" and "missile gaps." The Triad minimizes those risks because when vulnerabilities do begin to appear, they can be dealt with in an orderly fashion rather than with costly crash programs.

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Another advantage of the Triad is that the three forces interact to promote the survivability of them all. While the survivability of the SLBMs does not depend directly on the ICBMs and bombers, the Soviets could concentrate much larger resources on countering ballistic missile submarines if they did not have to worry about the other two components. The ICBMs and bombers, on the other hand, interact strongly for their mutual benefit. A simultaneous attack against ICBMs and bombers through U.S. warning screens would enable the alert bombers to launch even if the ICBMs were withheld. An effort to slip under the warning screens and attack the bombers would give the ICBMs unambiguous evidence of the attack through the prior detonation of weapons on airfields. And any attempt to pin down the ICBMs while attacking the bombers would run into such delicate problems of communication and timing that it would risk triggering both forces.

The Triad also provides major insurance against systems failures. The bombers are a thoroughly tested part of the Triad because they have experienced actual combat and fly daily. However, ICBMs and SLBMs are only fired on non-operational trajectories. Although we seek operational realism in test launches of our ICBMs, we have never launched them from operational silos. On two occasions, the Department has been denied the funds and the permission to fire the Minuteman ICBMs in this mode -- a practice the Soviets follow with some regularity. As a consequence, confidence in the three components of the Triad is uneven, and the possibility that some portions of the force might not perform as expected cannot be overlooked. As far as can be judged, however, there is virtually no probability that all three components would fail catastrophically.

As long as the ABM Treaty is observed, the ICBMs and SLBMs surviving a Soviet first-strike should be reliable enough to reach and attack their targets. Bomber penetration is less certain, although the great majority of the bombers should reach their targets, and planned modernization of the force will preserve that confidence in the future.

A second-strike by such a mixed force, approaching enemy targets at differing speeds, trajectories, and azimuths of attack, not only would complicate the problem of the defense; it would also permit a particular target to be attacked with delivery systems and weapons of differing characteristics. Cross-targeting increases the probability that even after a highly effective enemy first-strike, and even after some system failures, targets of importance to the enemy would come under attack from at least one element of the Triad.

For all these reasons, I believe we must continue with a Triad of bombers, land-based missiles, and sea-based missiles.

The overall size and composition of the Triad must necessarily depend on a variety of factors. I should point out in this connection that the peacetime inventory of delivery systems, weapons, and megatonnage is only one datum, and by itself not the most important, in indicating whether and

in what ways U.S. forces need to be strengthened. What counts from the standpoint of force planning is how much of a given peacetime inventory would survive a first-strike, penetrate the enemy's defenses, and destroy a designated set of targets. It matters very little if we have an arsenal of 3,000 delivery systems, 8,500 warheads, and thousands of megatons if only a few of those systems could survive a surprise attack and reach their targets. In the perspective of the force planner, if 200 bombers need to reach their targets, attrition from defenses is estimated at 20 percent, and we maintain a peacetime alert-rate no higher than 50 percent, the inventory would have to consist of at least 500 bombers. Depending on the system, peacetime inventories must always exceed the number of attacking systems, especially in the design of a second-strike posture. In short, a premium must be paid for the safety and stability of an assured retaliatory force. Such a premium should not be mistaken for overkill.

E. Assured Retaliation

Force size and composition will also be sensitive to the types of missions this retaliatory capability must perform. It is on this score, in fact, that the most significant issues arise concerning U.S. strategic nuclear forces. Widespread agreement exists that, at a minimum, the U.S. second-strike capability should be able to execute the mission of assured retaliation as the prime condition of deterrence. But even here, arguments persist as to specific targets and the damage to be assured. According to one approach, planners could simply target major cities, assume that population and industry are strongly correlated with them, and measure effectiveness as a function of the number of people killed and cities destroyed. Thus, as one example, prompt Soviet fatalities of about 30 percent and 200 cities destroyed would constitute a level of retaliation sufficient to assure deterrence.

A different approach views assured retaliation as the effort to prevent or retard an enemy's military, political, and economic recovery from a nuclear exchange. Specific military forces and industries would be targeted. The effectiveness of the retaliation would be measured in two ways:

- by the size and composition of the enemy's military capability surviving for postwar use;

- by his ability to recover politically and economically from the exchange.

If the Soviet Union could emerge from such an exchange with superior military power, and could recuperate from the effects more rapidly than the United States, the U.S. capability for assured retaliation would be considered inadequate.

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Both approaches can obviously be carried to absurd lengths. The point, however, is that whichever approach is taken, the number, yield, and accuracy of the weapons needed in the U.S. inventory will depend to an important degree on the level of damage required of the assured retaliation mission. The ability to destroy only 10 cities on a second-strike makes one kind of demand on the posture; the requirement to destroy 200 makes quite another.

The present planning objective of the Defense Department is clear. We believe that a substantial number of military forces and critical industries in the Soviet Union should be directly targeted and that an important objective of the assured retaliation mission should be to retard significantly the ability of the USSR to recover from a nuclear exchange and regain the status of a 20th-century military and industrial power more rapidly than the United States.

This objective has been set for a number of reasons. With the growth and diversification of the Soviet economy, and with continued Soviet efforts to disperse and protect vital industries, the practice of simply targeting the largest cities might no longer produce the effects previously assumed. More specific and precisely designated aiming points are needed, especially for the lower-yield weapons now in the U.S. strategic inventory. The number of targets must be substantial because low levels of damage would not necessarily deter a desperate leadership, whereas high levels of damage and a low probability of recuperation might do so. Where the assured retaliation mission is concerned, any prospective enemy must understand at all times that the United States has a second-strike capability which can do him, not significant or serious, but virtually irreparable damage as a modern nation and great power.

F.. Options

For some, a second-strike capability for counter-city retaliation is the essential and sole condition of strategic nuclear deterrence. To go beyond this minimal capability, as they see it, is to invite trouble: further competition, arms race and crisis instability, an increased risk of nuclear war, and a decreased probability of progress toward arms control and disarmament. For the United States, however, the deterrence of nuclear war requires a different approach than is embodied in the concept of counter-city retaliation.

1. Soviet Capabilities

As previous Defense Reports have emphasized, the Soviet Union has now developed a strategic nuclear offensive capability of such size and diversity that a number of options must be taken into account. One could begin with an attack on the theater-based forces of the United States and its allies, after which the Soviets might seek to deter retaliation with their large strategic nuclear reserve capability. Second, a creeping attack on SSBNs

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at sea, selected military facilities in a theater, or even silos in the continental United States itself, could be launched to demonstrate their resolve and to force the United States into major concessions. A third example would be an attempt to destroy U.S. bombers and ICBMs, disrupt our command-control-communications, and avoid major damage to U.S. cities and people, while at the same time holding in reserve a large follow-on capability targeted against other U.S. assets and available for successive waves of attack. Such a campaign would not necessarily disarm the United States, but it could leave us with only the forces and the plans for partial coverage of the enemy target system. With them, the United States might be able to cause heavy damage to the industrial base of the Soviet Union and even to its people. But the withheld Soviet force would be able to do equal or greater damage to an equivalent target system in the United States.

2. The Problem of Deterrence

The credibility of a deterrent based solely on the capability and doctrine of counter-city retaliation, however large or small the programmed response, is likely to be low in the face of such contingencies. The Soviets might be skeptical about the threat contained in such a posture, and inclined to test U.S. resolve to defend allies by these means. Even though we might delude ourselves about the credibility of the threat under normal peacetime conditions, we might find that we were more deterred by it than the Russians in a crisis.

These examples admittedly raise contingencies which, as far as can be judged, have a low probability of occurrence. However, we should not forget the risks that accompanied the Soviet deployment of missiles to Cuba in the autumn of 1962. And, even the surprise attack everyone agrees should be deterred tends to fall into this same category of low probability and high risk. Why then should the United States be any less concerned about equally rational and more limited attacks?

3. Options and Escalation

Less than full attack contingencies raise enormous uncertainties. We are totally lacking in any relevant experience of them. Yet we know that once nuclear weapons are used, calamity of an unprecedented nature will lurk in the wings. In these circumstances, even if the probability of nuclear escalation is high, it seems appropriate to have available for the President some options rather than only the full response of assured retaliation. Accordingly, the U.S. posture should include the ability both to implement some preplanned options and to improvise responses to events not anticipated in contingency planning.

4. Options and Hard Targets

It should be evident that once the possibility of some options is admitted, the range of targets becomes wide. Many targets important to a

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society's economy and political system are separated to some degree from heavy concentrations of people. That tends also to be the case with a number of military targets, including general purpose as well as strategic nuclear facilities. To attack relatively soft targets, and to minimize collateral damage, relatively low-yield weapons with high accuracies are required. In previous years, because of these considerations, it has been U.S. policy to seek improved command and control, higher accuracy, and an increased variety of warhead yields in order to implement an effective range of options.

Last year I stated we would be making system improvements such as increased accuracy so as to ensure that any attack could be met by a deliberate and credible response. Certainly the need for more than a limited hard-target-kill capability was not foreseen. The costs of such a capability are substantial, in part because the phenomenon of fratricide limits the number of weapons that can be usefully applied to a hard target and therefore imposes heavy demands for accuracy, reliability, and command-control. A major effort to acquire a comprehensive hard-target-kill capability is likely to raise apprehensions about crisis and arms race stability.

The United States has continued to hope that the Soviets would have a similar outlook and comparable concerns. Today, however, it is much less certain that they see the wisdom of abstaining from comprehensive hard-target-kill capability. Not only have they failed to give serious consideration to U.S. proposals for reductions in throw-weight; they are actually in the process of increasing their own throw-weight by a substantial amount. In addition, they are making rapid improvements in the accuracy of their ICBMs [REDACTED]

It is uncertain how rapidly these programs will come to fruition. But there is now an increasing probability that before the mid-1980s, the Soviets could have the capability, with a small fraction of their ICBMs, to destroy a substantial portion of the Minuteman/Titan force as well as non-alert bombers and submarines in port. This potential would in no way give the Soviets a disarming first-strike. But it could enable them to create a dangerous asymmetry. As previous Defense Reports have emphasized, much of the U.S. capability for deliberate, controlled, selective responses resides in the Minuteman force. If much of that force were eliminated, the Soviets would preserve their flexibility while that of the United States would be substantially reduced. The Kremlin would still have options; the choices open to a President would be limited.

This is not an acceptable prospect. It would be preferable to see the life of the fixed ICBM forces on both sides prolonged a good deal longer. Eventually, however, even with foreseeable arms control measures, improvement in accuracy combined with large throw-weights could make such systems unreliable as second-strike forces. But additional time in which to

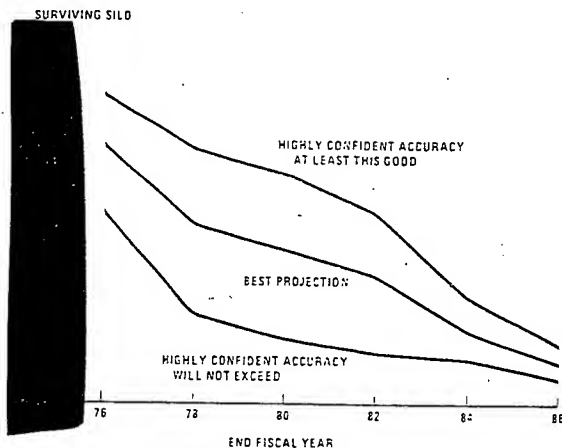
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negotiate and make deliberate decisions about reasonable substitutes would be valuable. That is the course the United States would still like to see both sides follow. But, we cannot permit the major degradation in the Triad that the growing Soviet capabilities threaten. And the United States must not permit the development of a major asymmetry in potential outcomes, with all the political and military hazards accompanying such a prospect.

CHART IX-3

SILO SURVIVABILITY
SENSITIVITY TO SOVIET ACCURACY



If the life of the fixed, hard ICBMs cannot be extended, then stability requires both sides to improve their land-based forces enough so they are more difficult to target by the other side. The United States should not accept a strategic relationship in which we must bear the heavier costs of alternative basing while the Soviets are allowed the luxury of retaining their fixed ICBMs. Since high accuracies can be built into mobile as well as fixed systems, the Soviet leadership should be aware that if the United States moves toward mobility, the Soviets will have strong incentives to go mobile as well.

5. Options and First-Strike

The United States is not interested in creating a first-strike capability, acting provocatively, or threatening stability. The Congress will surely

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recognize that it is the Soviet Union and not the United States which has taken the initiative in creating this prospect. Members will also notice that the same critics who oppose the necessary U.S. countermeasures argue that the strategic nuclear balance is stable, not delicate, and that major asymmetries do not matter. Perhaps critics can live with these inconsistencies. The United States cannot.

The U.S. position is straightforward and consistent. We do not believe either side can achieve a serious, high-confidence, disarming first-strike capability, and we do not seek to attain one. To that extent, the strategic nuclear balance can be said to be stable. But significant asymmetries in the outcome of a strategic nuclear exchange can be created, and these asymmetries could give -- and would be seen to have given -- a meaningful advantage to one side over the other. As long as so much of the U.S. capability for flexibility is invested in the ICBM force, and as long as some options continue to be desirable, such an asymmetry could arise if one side eliminated most of the other's ICBMs. The United States should not permit that eventuality to develop.

6. Options and Stability

This line of reasoning tends to be opposed only by those who, despite the evidence, cling to the view that there is only one condition of stability, namely mutual assured destruction; that the Soviets faithfully subscribe to that doctrine; and that the Kremlin will respond cooperatively to U.S. restraint. The same opponents contend that any options are provocative and increase the probability of nuclear war. More or less simultaneously, they assert that having options (and the limits on destruction implied by them) is infeasible because any nuclear exchange is bound to escalate to an all-out attack on cities, and because the collateral damage from nuclear detonations on military targets, especially hard targets, would make even a limited exchange indistinguishable from an all-out conflict. The conclusion from this reasoning is inexorable: the maintenance of options is both destabilizing and infeasible. Presumably, the prospective loss of the U.S. capability need be of no concern, while any threat to a comparable Soviet capability is provocative.

This is not a persuasive position. It depends upon assumptions about Soviet beliefs and behavior that are not borne out by the facts. It applies different standards of conduct to the United States than to the Soviet Union. And it is inconsistent. None of the allegations -- about the provocative and damaging consequences of options -- have any basis in experience. U.S. strategic plans have contained options for many years, yet no one has been provoked or tempted in a crisis. Indeed, to attach such importance to options, which are little different from other contingency plans, is to ignore how decisions about peace and war are made. Far more important than options in the choice of capabilities is the degree of U.S. conventional strength. If the nuclear threshold has been kept high, conventional responses will be given first priority in a crisis (at least

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by the United States) regardless of whether nuclear options are available. Experience should make that evident.

7. Options and Collateral Damage

As for the argument that anything less than a full-scale response would be indistinguishable from direct attacks on population, data and analyses indicate the contrary. In every case considered, both the short-term and the longer-run collateral damage from attacks on a comprehensive list of military targets (including ICBM silos) has been dramatically lower than the fatalities from direct attacks on population targets. It must be emphasized, however, that the results, even in limited and controlled exchanges, could be appalling. They could involve the potential for millions of fatalities, even though the distinction between 10 million and 100 million fatalities is great and worth preserving. No U.S. decision-maker is likely to be tempted by this prospect, especially in view of the dangers of nuclear escalation.

It is no inconsistency to recognize those dangers and still see the desirability of having some options short of full retaliation. The other side is fully capable of inventing and considering options. And precisely because we are uncertain about the course and ultimate consequence of a nuclear exchange beginning with less than a full response, surely all would want to avoid bringing about a holocaust by U.S. actions and would want any President to have at least the option to respond in a deliberate and controlled fashion. Just as surely, if such were actually to be the U.S. response in the terrible event of an attack, it is a response that must be available for the purposes of deterrence. To depend on irrational behavior by the Soviets, and to depend equally on an irrational response by us, is to put nuclear deterrence in double jeopardy. The Soviets, by their activities, indicate that they are not interested in mutual assured destruction. Accordingly, they must be accepted for what they are, not for what we want them to be. Their actions indicate that they take nuclear war seriously; the United States must do no less. Part of taking it seriously is responses short of full-scale retaliation in our strategic nuclear capabilities. It is a condition of stable deterrence.

G. Equivalence

Satisfaction of the fundamental requirements of second-strike survivability, Triad insurance, assured retaliation, and options should ensure stable deterrence under most circumstances. These requirements, in fact, underlie the current U.S. strategic nuclear posture. There is, however, one other factor we must consider in our planning.

It is generally recognized that world stability depends to a remarkable extent on the strength of the U.S. strategic nuclear deterrent. Unfortunately, not everyone assesses the effectiveness of that deterrent in the same way. It is the subject of many and differing perceptions which, in turn, can

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affect the behavior of prospective enemies, allies, neutrals, and attentive publics in the United States itself. If friends see the balance as favoring the Soviet Union rather than the United States, their independence and firmness may give way to adjustment, accommodation, and subordination. If potential enemies have a similar perception, they could misjudge the situation and make demands leading to confrontation, crisis, and unnecessary dangers. If domestic audiences see real or imaginary imbalances, they could insist on excessive and costly crash programs to restore the equilibrium. One has only to recall the reaction of Mao Tse-tung to the appearances of Soviet missile superiority after the Sputnik demonstrations, and the response in the United States to charges of a "missile gap," to recognize the impact of such perceptions on international affairs.

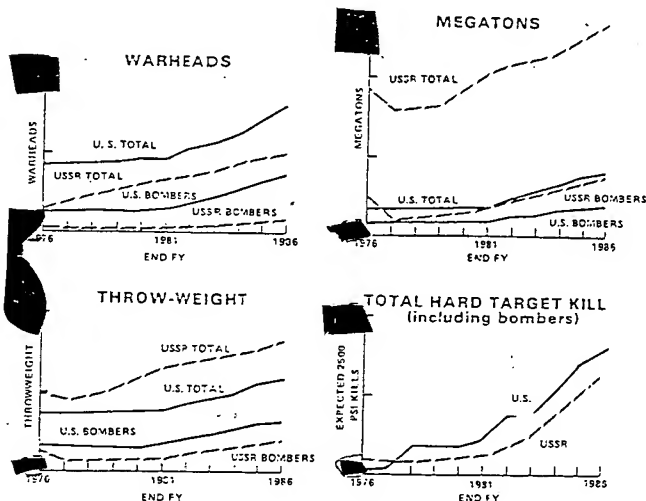
However much one might wish otherwise, popular and even some governmental perceptions of the strategic nuclear balance tend to be influenced less by detailed analyses than by such static indicators of relative nuclear strengths as launchers, warheads, megatonnage, accuracy, throw-weight and the like. If all or most of these indicators were to favor the Soviet Union, a number of observers might conclude that the United States was not equivalent to the USSR in strategic power and that the balance was now weighted in favor of the Soviet Union.

It is to be hoped that, in designing the U.S. strategic posture to meet the requirements of adequate and stable deterrence, the perception as well as the reality of a strong deterrent will be created. U.S. programs of research and development should be expected to be, and be seen to be, sufficient to offset the dynamism of the Soviet Union in this realm. But to the extent that rough equivalence is not credited to the United States in these two respects, actions to create the necessary perception of equivalence could be required.

At the present time, it is widely agreed that the United States is seen as having "rough equivalence" with the Soviet Union, even though, up to now, we have not added to our strategic posture for that purpose. The United States should also continue to stress the effectiveness of its strategic forces in the performance of their missions as the basis for judging their adequacy. But the Congress and common sense require that the United States not be inferior to the Soviet Union, and the Vladivostok Understanding postulates equality between the two sides in central offensive systems. Accordingly, U.S. plans and programs for future U.S. offensive capabilities must be geared to those of the USSR.

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CHART IX-4
MEASURES OF THE STRATEGIC BALANCE
—ON-LINE FORCES—



H. Arms Control

Whatever the influence of rough equivalence on U.S. force planning, it is occasionally asserted these days that a powerful factor affecting the U.S. strategic posture is a distorted view of arms control held by the Defense Department. The allegation imputes to DoD an exploitation of every loophole in existing agreements to develop exotic and unnecessary weapons and drive the strategic force structure up rather than down. Arms control negotiations and agreements, at least in their present form, are alleged to be counterproductive in that they create demands for bargaining chips subsequently converted into legitimized weapons programs. Just as bad, by this theory, are the safeguards demanded by the Defense Department as the "price" for endorsement of pending arms control agreements, since they, too, allegedly can turn into entering wedges for further weapons developments.

Such charges might better be directed at the Soviet Union. Certainly they are wide of the mark when aimed at the United States. The idea of bargaining chips is not new; it was not invented in our lifetimes. For

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example, in 1966, President Johnson began to use the ABM defense system as a negotiating counter. In fact, despite its cost, the ABM "chip" did not serve the United States badly. An ABM treaty would hardly have been signed without it. It should be remembered, moreover, that weapons can only be effective as bargaining chips if there is a serious need for the weapon system in the U.S. strategic inventory. To develop systems simply to throw them on the negotiating table would be folly. The Soviets would not pay anything to stop them. U.S. policy is to develop only those weapon systems for which there is a justifiable military need. Serious programs thus may become bargaining chips and be affected in their development and deployment by arms control considerations. What are seen merely as bargaining chips will not become serious programs, nor will they be effective bargaining chips.

[REDACTED] U.S. monitoring of agreements has been adequate so far. This reasonable level of confidence in national means of verification is likely to decline, however, to the extent that the Soviets attempt to conceal or disguise their programs, and if SALT negotiations attempt to control the more qualitative, as opposed to quantitative features of strategic arms. In these circumstances, it makes sense to take account of the possibilities for cheating, the possible failure of complex negotiations, or even the sudden abrogation of agreements, followed by a rapid Soviet deployment of systems previously banned or controlled.

Arms control considerations do have an impact on strategic force planning. The United States is committed to abide by existing and pending SALT agreements. Strategic stability is considered next to deterrence in force planning, and the United States has sought to preserve stability in the presence of highly dynamic technology. But it must be recognized that precisely because technology is dynamic, the contributions of arms control to stability may well be modest, and may be overtaken on occasion by events.

Even under more hospitable conditions than now exist, arms control negotiations and agreements could not be expected to substitute completely for unilateral force planning or remove all the uncertainties with which that planning is so centrally concerned

[REDACTED] Accordingly, the United States must continue its efforts in SALT while supporting them with prudent unilateral planning to ensure the continuing credibility of the deterrent and the maintenance of stability.

I. Damage-Limiting

One of the main uncertainties at the present time is the extent to which the Soviets are developing a major damage-limiting capability. Since

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the concept of damage-limiting has not received much attention for some time, it is useful to set out the range of damage-limiting strategies.

The most modest strategy attempts to limit the damage from attacks directed against military and other targets not directly associated with population. It does so primarily through fallout shelters and the evacuation of people from exposed target-areas. The most ambitious strategy dictates a first-strike capability against an enemy's strategic offensive forces which seeks to destroy as much of his megatonnage as possible before it can be brought into play. An enemy's residual retaliation, assumed to be directed against urban-industrial targets, would be blunted still further by a combination of active and passive defenses, including ASW, ABMs, anti-bomber defenses, civil defense, stockpiles of food and other essentials, and even the dispersal and hardening of essential industry.

Most damage-limiting strategies represent an effort by one belligerent to maximize damage to his enemy and minimize it to himself. The assumption behind such strategies is that, if major asymmetries in damage can be achieved, one side (the "winner") will survive as a functioning nation while the other will not. Thus, the outcome of damage-limiting campaigns can in some sense be measured in terms of the ability of the two belligerents to recuperate from such barbaric attacks. However, the techniques currently used to assess the post-attack powers of recuperation of the two sides are analytically weak and plagued with uncertainties. Key decision-makers, in any event, are not likely to be very interested in the possibility that the Soviet Union could restore its prewar Gross National Product in 10 years, while it would take the United States twice as long to achieve the same result.

The most modest approach to damage-limiting would not attempt to protect urban-industrial targets from direct attacks. Consequently, it would not seriously jeopardize an opponent's capability for assured retaliation. The most ambitious approach, with its emphasis on active and passive defenses for both population and industry, would obviously try to minimize the effects of assured retaliation. In the United States, such a strategy has been seen, therefore, as a major stimulus to the strategic arms competition and a guarantee of instability.

The United States has never gone very far down the road of damage-limiting. Opposition to that strategy has been sharp, and there have been other reasons for stopping short in such an endeavor. The problems of eliminating any enemy's entire strategic nuclear force by offensive means have grown increasingly difficult with the years, and further investments toward that end have always shown rapidly diminishing returns to scale. Moreover, once SALT limited ABM deployments to one site, little seemed feasible against the large, early-warning Soviet missile force, and little worth doing against the small, late-arriving Soviet bomber force. Emphasis therefore shifted from the elaborate dedicated

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continental air defenses popular in the 1950s to early warning, surveillance and peacetime control of American airspace, and development of a mobile, fighter-defense force based on AWACS. The advantage of the mobile force is that, while it is intended primarily for defense of a theater overseas, it would be based in the United States and could be committed to continental air defense in an emergency. With the emergence of the Soviet Backfire the continued development of this dual-purpose force seems particularly appropriate.

With the emphasis on active defenses substantially reduced, it was considered almost pointless to advocate a major program of passive defenses centered on blast shelters. Only a modest fallout shelter program has been provided as what amounts to a hedge against limited attacks on military and non-collocated economic targets -- attacks which would not be directed at major urban-industrial centers but which could produce serious short-term fallout effects on nearby concentrations of people.

In sum, U.S. policy for some years has been to avoid the development of large first-strike forces and major damage-limiting capabilities through active and passive defenses. Restraint in both areas, it was hoped, would demonstrate to the Soviets that the United States did not intend to threaten their capability for assured destruction, and that, accordingly, their basic security was not endangered by the U.S. deterrent posture. But such restraint cannot long be unilateral; it must be reciprocated. Any effort by the Soviets to erode the U.S. capability for assured retaliation by means of major damage-limiting measures must lead to adjustments on our part to maintain a credible deterrent.

J. Requirements

It is with all these factors, assumptions, and objectives in mind that, over the years, the United States has adopted a strategy of flexible nuclear response and arrived at a strategic nuclear posture consisting of:

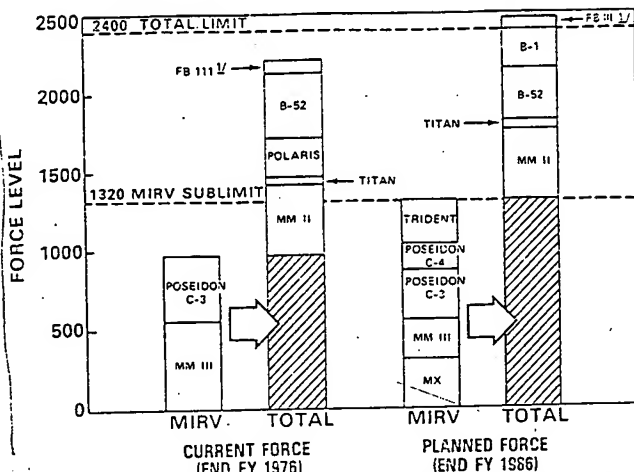
-- A high-confidence Triad of second-strike retaliatory forces within the Vladivostok Understanding of 2,400 strategic nuclear delivery vehicles;

-- Around 8,500 warheads on delivery vehicles for adequate coverage of all relevant mission targets, even after the attrition suffered from an enemy first-strike and from the penetration of his defenses;

-- A single ABM site on inactive status except for its Perimeter Acquisition Radar (PAR) and a light dedicated air defense to provide surveillance and peacetime control of U.S. airspace and prevent a "free ride" over the North American continent;

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CHART IX-5
U.S. STRATEGIC FORCE LEVELS



1/FB-111 IS CURRENTLY NOT ACCOUNTABLE FOR SAL PURPOSES

-- A mobile fighter-interceptor force coupled with AWACS which could be used for continental air defense in an emergency;

-- A civil defense program designed to shelter the population against fallout in existing structures, and to develop the capability to evacuate citizens from selected areas during a period of grave crisis;

-- A system of multiple, complementary surveillance and early warning capabilities combined with a survivable command-control-communications network designed to permit the President to direct the strategic nuclear forces in a deliberate and controlled manner in pursuit of national objectives.

With the necessary modernization to replace aging and obsolescing systems, this remains a reasonable posture for the future. Whether the United States can continue to adhere to these preferences much longer depends on the cooperation of the Soviet Union. Unfortunately, excessive expectations on that score are not in order.

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I. THE NUCLEAR FORCES

A. Strategic Forces

1. Strategic Offensive Forces and Programs

a. The Basis for the Program

U.S. force planning continues to emphasize programs to ensure a fully credible second-strike strategic deterrent. As indicated in Section I, assessments reveal a need for systems with increased military effectiveness and survivability in order to:

- counter projected improvements in Soviet offensive systems and damage-limiting capabilities;
- improve survivability under a potentially heavier Soviet attack;
- accommodate reasonable growth projections in the number of Soviet targets; and
- meet the needs of our targeting doctrine.

Force planning under current policy is constrained by the numerical limitations of the Strategic Arms Limitation Talks (SALT), and in particular, those limitations anticipated in light of the Vladivostok Accord

Similarly, projections of Soviet force capabilities assume that they, too, will be constrained by the proposed SALT limits, although the USSR has the capacity to exceed these limits.

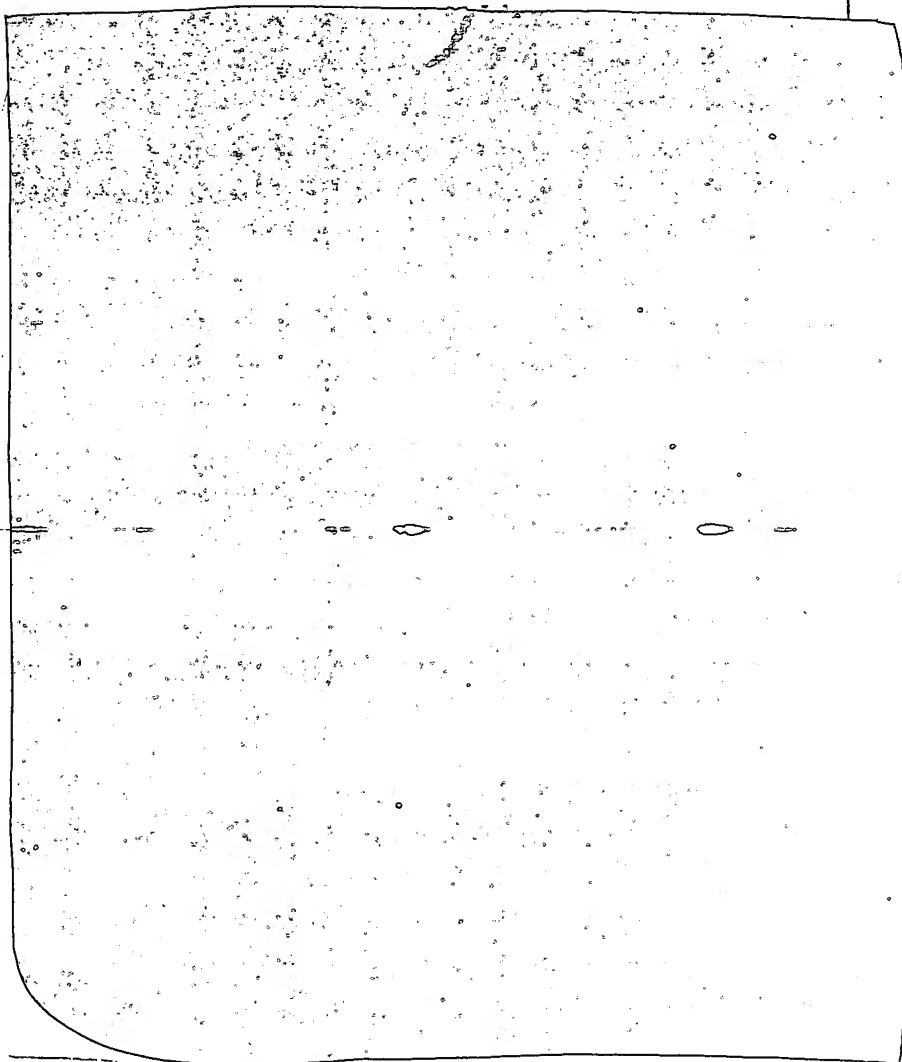
Given the objective of deterrence, which relies most heavily on the military effectiveness of our retaliatory forces under a variety of possible circumstances, there are a number of factors which must be considered in shaping our forces. We must:

- have strong confidence in the ability of U.S. strategic forces, individually and collectively, to absorb and survive a large scale, enemy first strike and still mount a second strike in retaliation.
- be alert to the age of U.S. strategic forces, taking timely steps to enhance the effectiveness of aging systems as Soviet modernization degrades their capabilities, and to replace obsolete systems when cost and effectiveness considerations dictate. Further, U.S. planning must be sensitive to the pace of future deployments to prevent, to the extent possible, future block obsolescence of strategic force elements.

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CHART I-1



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-- continue to implement those programs designed to provide the National Command Authorities with a range of strategic options so that we have the capability to carry out responses reasonably appropriate to the level of provocation.

-- continue to plan U.S. forces in such a way that individual or collective force characteristics are not seen as inferior to those of the Soviet force and, to the extent possible, are not seen as destabilizing.

I am convinced that a strong deterrent posture requires a Triad of strategic nuclear forces. The advantages of force diversification and the developments in Soviet forces demonstrate that the mutually supporting characteristics unique to the Triad should continue to make it the cornerstone of U.S. force planning. I further believe that, despite the costs of the Triad, its forces compare favorably from a cost-effectiveness standpoint with less diversified force mixes, including those which would abandon reliance on a bomber force or on the ICBM force.

Survivability

The future survivability of the U.S. silo-based Minuteman system, and indeed of any targetable system, is being endangered as a result of Soviet momentum in both the quality and quantity of their ICBM deployments. In particular, we are concerned about the potential counter-silo capability inherent in a large number of MIRVed warheads which possess high yield and improved accuracy. Our calculations indicate that by the early 1980s there could be a substantial reduction in the number of surviving U.S. ICBMs should the Soviets apply sufficient numbers of their forces against the U.S. ICBM force in a first strike.

In the near term, we are enhancing the survivability of the ICBM force by upgrading the hardness of some Minuteman silos. When this program is complete, much of the Minuteman force will be capable of sustaining high static overpressures, ground shock, electromagnetic pulse, and radiation without damage to the missile or supporting electronic equipment. In the longer term, however, I share the reservations expressed in the Conference Report on the FY 1977 Budget Authorizations regarding the survivability of a silo-based replacement for the Minuteman force. Consequently, the program we are presenting this year pursues into engineering development the option described last year, that of deploying a new, high yield MIRVed ICBM in a mobile basing mode.

The SLBM force, when deployed at sea, will continue for the foreseeable future to be the least vulnerable component of the strategic Triad. However, we cannot ignore the heavy emphasis which the Soviets are placing on anti-submarine warfare. For this reason, continued high prelaunch survivability is a keystone of the Trident program and is enhanced both by the increased operating area made possible by the Trident I missile's greater range and by the acoustic silencing measures being built into the Trident submarine. Operation of the initial Trident

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submarines in the Pacific will further complicate Soviet ASW efforts by significantly increasing our current two ocean SLBM deployment patterns. Further, the plan is to continue the SSBN Security Program in order to identify and explore those technologies which could threaten our SSBNs and to recommend effective countermeasures. With regard to SLBM penetration-to-target capability, we propose to sustain a low level advanced development effort on the successful MK-500 Evader reentry vehicle to ensure its availability in a timely manner [should the Soviets abrogate the ABM treaty and pose a significant ABM threat.]

The most severe threat to the prelaunch survivability of the strategic bomber force would be a coordinated SLBM attack employing depressed trajectories to reduce available bomber reaction time. While there is no evidence that the Soviets have tested such a capability, they are improving the effectiveness of their SLBM force and increasing its size. In addition to enhancing bomber offensive capabilities, the B-1, which is now in production, will be capable of responding to this threat by providing aircraft with a shorter reaction time, faster escape speed, and greater resistance to nuclear effects. Additionally, because of its smaller size and shorter takeoff distance, the B-1 is capable of operating from a larger number of dispersed bases, thereby increasing the targeting problems of any would-be attacker.

We are addressing the projected increase in Soviet air defense capabilities in several ways. The B-1 has been specifically designed to be as insensitive to the air defense threat as is technologically possible. In accomplishing with high confidence the bomber force mission of penetration to the target and weapons delivery, it is the most cost-effective alternative of a wide variety of alternatives that were examined. In addition, while we project that the penetration effectiveness of the B-52 force will decline significantly during the mid-1980s because of the increasing Soviet air defense threat, analysis has shown that we can maintain the effectiveness of a portion of the B-52 force by employing them as platforms for air-launched cruise missiles (ALCMs). [Although cruise missiles, which are designed using present technology, are not projected to be effective against targets defended by sophisticated low altitude SAMs, the B-1 equipped with Short Range Attack Missiles (SRAM) is capable of high confidence destruction of these targets.]

Force Modernization

The MX program, which we are proposing to accelerate somewhat, is at the heart of the U.S. ICBM modernization plan. While the replacement of aging components of the current force is in part tied to the pace and content of the MX program, near term improvements of existing systems are also necessary because of Soviet actions and present SALT limits. Several Minuteman options are under study, [including a new warhead for Minuteman II], for which initial funding is proposed next year.

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The original urgency of the SSBN program and the resulting high annual SSBN building rate during the late 1950s and early 1960s now causes the most severe block obsolescence problem among the strategic forces. Trident procurement, which we propose to continue, represents an orderly and affordable replacement program for the current SSBNs. We recognize, however, that if we have to phase out Polaris/Poseidon SSBNs after 20 or even 25 years of service, even with continued Trident acquisition, we will suffer a substantial reduction of SLBM launcher capability in the late 1980s and early 1990s. The Trident II missile, for which we propose the initiation of a concept formulation effort, could partially offset this reduction since it could more fully utilize the throw-weight potential inherent in each Trident submarine launcher tube and could enhance SLBM capability across the entire target spectrum through accuracy improvements and payload flexibility.

Because of the increasing age of the bomber force, plans are to deploy the B-1 bomber and to lengthen the effective service life of some B-52s through aircraft modification and configuration with cruise missiles. This will alleviate this problem significantly.

Flexible Response

Positive command and control, high accuracy and timely weapon delivery make the ICBM force an attractive candidate for a more flexible range of response options to the National Command Authorities (NCA). The Command Data Buffer System now permits, beyond its prestored capability, retargeting of a single Minuteman III missile in 25 minutes, and, when fully operational in 1977, will permit retargeting of the entire force in less than 10 hours. We propose a further enhancement of this capability by developing C³ improvements, primarily a missile status uplink to and retargeting capability from the Airborne Launch Control System, which will be installed in a number of U.S. airborne command post aircraft. Finally, we continue to propose the incorporation of software improvements in the Minuteman III guidance; these will enhance both the effectiveness of the system and the confidence with which we can employ it over a wide range of attack options.

Owing to its characteristics, such as short time of flight, existing rapid retargeting capability, and non-CONUS launch areas, the present SLBM force provides the NCA with several response options. We are pursuing improvements in SLBM accuracy and SLBM C³ which could provide even greater effectiveness and flexibility in the execution of various response options. The Trident II concept formulation effort will also examine potential SLBM contributions in this regard.

An effective bomber force provides the NCA with the only strategic delivery system which can be launched on warning and recalled. In addition it is the only strategic system which can be retargeted while it is airborne. Moreover, it provides the flexibility of a multi-purpose system.

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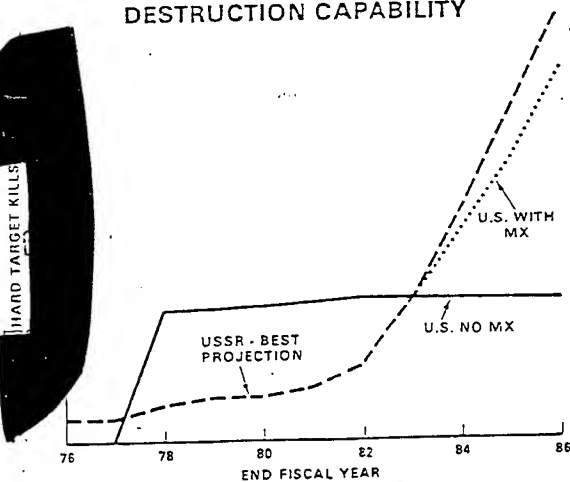
Strategic Equivalence

At present there is "rough equivalence" in the strategic balance. Consistent with this assessment is the fact that neither U.S. nor Soviet ICBMs today possess a significant

however, a significant and potentially destabilizing asymmetry in missile hard target kill capability is projected to develop in the mid-1980s.

Our plans for the deployment of a mobile MX and development of Trident II give us the potential to match the Soviets in hard target kill capability, to minimize potential instabilities stemming from this Soviet capability, and most important, to encourage the Soviets to pursue a less destabilizing ICBM deployment pattern in later years.

CHART I-2
TIME URGENT HARD TARGET
DESTRUCTION CAPABILITY



NOTE: ONLY MISSILE SYSTEMS WITH A HIGH PROBABILITY OF
HARD TARGET KILL (0.7 OR BETTER) ARE INCLUDED.

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b. Description of the Programs

U.S. strategic programs are familiar to the Congress. Accordingly the emphasis here is on new program developments and those programs reaching significant milestones in the coming year. Acquisition costs for all major strategic programs are shown in Table I-1.

(1) ICBMs

This past year has marked an active period in assessing the future role of the ICBM force. We have concluded that continued support of a Triad of forces and of a strong ICBM element within the Triad is clearly the best way to meet the conditions of deterrence.

Minuteman

Last year, the assessment of the Soviet ICBM program and the fact that a SALT II agreement had not been completed, led us to amend our original budget request; the funds were to protect the option to continue production of 60 additional Minuteman III missiles in FY 1977. Following favorable Congressional action on this request, the President directed that funds be released for this purpose. While the eventual disposition of these missiles has not been determined, we have decided not to deploy additional Minuteman III missiles to replace Minuteman II missiles at this time. Also, we have not included funding in the current request for continuation of Minuteman III production into FY 1978 because of plans for MX.

The upgrade of Minuteman III silos, including installation of the Command Data Buffer System, is scheduled for completion during FY 1977. To enhance the flexibility of the Minuteman force, and the survivability of the launch control capability, we are initiating development of a Phase III Airborne Launch Control System (ALCS), with initial operational capability planned for [FY 1982]. The system will have the capability to provide Minuteman status information to the ALCS from the silo and to retarget Minuteman III missiles from the ALCS. This capability is not available today. Consequently, should the Launch Control Centers be destroyed in an attack, the more survivable ALCS would not have to launch "in the blind" without knowledge of missile availability or control over missile targeting. Some \$3 million is being requested in FY 1978 for development of the ground portion of the ALCS Phase III system, including the system integration effort and development of an uplink antenna. Funding for development of aircraft modifications is being requested as part of the Post Attack Command and Control System (PACCS) funding.

Improved Minuteman

The FY 1978 budget request continues production funding for the MK-12A reentry vehicle. Since we last described this program to you, the ERDA has certified the results of [redacted] testing of MK-12A warhead candidates.

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TABLE I-1

Acquisition Costs of Major Strategic Forces Modernization
and Improvement Programs 1/
(Dollars in Millions)

	FY 1976 Actual Funding	Trans. Period Actual Funding 2/	FY 1977 Planned Funding	FY 1978 Prop'd Funding	FY 1979 Prop'd for Authorization
<u>Strategic Offense</u>					
Minuteman and Improvements (Silo Upgrade, Command Data Buffer, MK-12A War- head, NS-20 Guidance Refinements)	804	105	770	338	146
Advanced ICBM Technology, including MX	36	13	69	214	1533
Development of Advanced Ballistic Reentry Systems and Technology (ABRES)	91	24	106	109	125
Conversion of SSBNs to Poseidon configuration, Modification of Poseidon Missiles	91	7	42	26	6
Acquisition of Trident Submarines and Missiles and MK500 RV (Trident II not included in total)	1,931	609	2,812	3,626	2,339
Development of Trident II Missile	-	-	-	5	110
SSBN Subsystem Tech- nology Development	-	-	2	3	11
Improved Accuracy Program	39	14	95	110	98
Acquisition of New Strategic Bomber, B-1	661	152	1,556	2,162	2,915
Development of the Air- Launched and Submarine/ Land-Launched Versions of the Cruise Missile	143	50 140	199	358	229

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TABLE I-1
Acquisition Costs of Major Strategic Forces Modernization
and Improvement Programs 1/
(Dollars in Millions)

	FY 1976 Actual Funding	Trans. Period Actual Funding 2/	FY 1977 Planned Funding	FY 1978 Prop'd Funding	FY 1979 Prop'd for Authorization
<u>Strategic Defense</u>					
Acquisition of a Follow-on Interceptor	-	-	-	26	81
Development and Procurement of the Joint Surveillance System	14	5	6	15	153
Continued Development of the Over-the-Horizon (OTH) Backscatter Radar	9	7	19	2	5
Development of Enhanced Distant Early Warning Line Radars	-	-	-	1	5
Development of Ballistic Missile Defense Advanced Technology	97	25	103	107	123
Development of Systems Technology (formerly Site Defense)	100	25	100	108	122
Continued Improvements in the Defense Support Program	65	9	60	125	230
Modernization of BMEWS (Ballistic Missile Early Warning System)	1	3	6	15	14
Development and Acquisition of the SLBM Phased Array Radar Warning System	46	2	13	7	4
Development and Improved Space Defense Systems	22	7	61	126	265
Civil Defense	80	27	84	90	123

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TABLE I-1
Acquisition Costs of Major Strategic Forces Modernization
and Improvement Programs 1/
(Dollars in Millions)

	FY 1976 Actual Funding	Trans. Period Actual Funding 2/	FY 1977 Planned Funding	FY 1978 Prop'd Funding	FY 1979 Prop'd for Authorization
<u>Command and Control</u>					
Development and Procurement of Advanced Airborne Command Post (AABNCP)	42	8	89	66	175
Development and Procurement of Satellite Communications (AFSATCOM I and II)	39	6	34	38	80
Development of ELF Communications System	14	4	15	24	41
Acquisition and Modification of Tacamo aircraft	30	5	18	32	19
Hardening of Alternate National Military Command Center (ANMCC)	-	-	-	7	56

1/ Includes costs of RDT&E, procurement of the system and initial spares, and directly related military construction; the Civil Defense funding shown is the entire Civil Defense budget.

2/ July 1 to September 30, 1976.

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[REDACTED]

[REDACTED] additional RDT&E will be required. An additional \$10 million, or a total of \$25 million RDT&E, is being requested in FY 1978 and \$22 million in FY 1979 for this purpose.

[REDACTED] Current plans call for replacing MX-12 warheads on [REDACTED] Minuteman III missiles with MX-12A warheads [REDACTED]. The NS-20 guidance software improvements are scheduled to be incorporated during FY 1978 on all Minuteman III missiles.

Advanced ICBM Technology and MX

The most significant strategic initiative being proposed in this year's budget request is an acceleration of the MX ICBM program. The decision to accelerate development of a new, larger and more effective ICBM was based on the following considerations:

-- Force Survivability and Effectiveness. The ICBM is the only leg of the Triad which currently possesses a prompt, high confidence, counter-attack capability against a broad spectrum of targets, both soft and hard. The fixed-silo ICBM is, however, becoming more vulnerable. Consequently, it is necessary to provide in roughly the same time frame the option to deploy an ICBM that is highly accurate and itself is deployed in a basing mode relatively less sensitive to the Soviet hard target threat.

-- Equivalence. Today we find that there is a "rough equivalence" between U.S. and Soviet strategic forces. However, projections of Soviet ICBM capability indicate that a serious imbalance in missile hard target kill capability could develop by the mid-1980s if we fail to improve U.S. forces. This asymmetry may, in the future, cause the Soviet Union to believe that there is an advantage to be gained by a first strike against the U.S., and particularly its ICBM forces. Deployment of the MX in a more survivable mode would prevent the development of such an asymmetry, and might serve as an incentive to the Soviets to slow their momentum in deploying new ICBMs and seek mutual reductions in strategic offensive force levels.

The MX program will provide the option to deploy a larger throw-weight, highly accurate, MIRVed ICBM in a survivable basing mode in early FY 1984. The basic missile design is derived from a broad technology base achieved through guidance and propulsion activities conducted in the advanced ICBM technology program element. In addition, both the ABRES and Minuteman programs have contributed to MX in the areas of reentry vehicle technology and improved guidance. The primary basing concepts, at this time, consist of concealing mobile missiles in either underground trenches or hardened shelters. The objective is to provide missile basing at a large number of aim points, each of which must be assumed to be equally likely to contain a missile.

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We are requesting \$49 million in FY 1978 to continue the advanced ICBM technology effort in support of MX advanced development -- particularly emphasizing basing modes -- and \$245 million to initiate MX engineering development. A major portion of the engineering development funding will be used to start the design and initial fabrication efforts on the three propulsion stages, the post boost vehicle, and the guidance and control sub-assemblies.

Advanced Ballistic Reentry Systems (ABRES)

The U.S. retains a significant lead in reentry system technologies as a result of the ABRES program. The plan is to continue this effort at about the same funding level and pace as last year. Besides the continued development of penetration aids for the MX-500 Evader reentry vehicle, additional attention will be directed to the development of the technology for advanced reentry vehicles for MX, and eventually for Trident II.

(2) SLBMs

Sea-based strategic weapons systems provide the greatest assurance into the foreseeable future of a survivable retaliatory force. For this reason it is necessary to fund adequately SLBM and SSBN support programs, across a broad range, from the support of basic research to improved operating procedures. Specifically, we are requesting funding to continue investigations into the feasibility of improving the accuracy of SLBM weapons, to procure two Trident submarines, to continue funding the program to backfit the long-range Trident I missile into Poseidon SSBNs, and to conduct conceptual studies for a follow-on missile for the Trident submarine.

Poseidon

Of the 31 planned Polaris to Poseidon conversions 28 have been completed, but only 26 are currently deployed. Of the five not yet deployed, one is undergoing pre-overhaul operation, another has reentered the shipyard for its first post-conversion overhaul, and the remaining three are still in conversion. Deployment of the 31st boat is expected early in FY 1978.

To date 41 Poseidon Modification Program (POMP) missiles, selected at random from Poseidon submarines returning from patrol, have been flight tested with a success rate of 76 percent. Further tests will be conducted in 1977 to provide data for a more statistically sound evaluation of reliability.

Trident

The Trident building program continues with two submarines funded at \$1,778 million in the FY 1978 budget and a request for authorization for one submarine in FY 1979.

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The Polaris/Poseidon fleet is aging and its ultimate replacement by a Trident force will assure we retain a highly survivable, sea-based deterrent force far into the future. It is believed that Polaris/Poseidon submarines can be operated safely and effectively through their 20th year of service and possibly longer. However, retirement of Polaris/Poseidon at 20, or even 25 years, coupled with the current Trident building rate, would result in a reduction in the present number of SLBM launch tubes in the late 1980s and early 1990s, since the Polaris/Poseidon force was built at a much faster rate than that planned for Trident.

Four Trident submarines are now under contract. The Department is continuing to plan for an FY 1979 initial operational capability (IOC); however, delays in the first Trident missile development flight tests and a delay in first ship delivery have moved the IOC to September 1979. The plan to backfit Trident I (C-4) missiles into a deployed force of 10 Poseidon SSBNs will begin in FY 1980 and be completed in FY 1984. The backfit of the Trident I missile is to be accomplished both alongside a tender during an extended refit period and during regularly scheduled shipyard overhauls. [The Trident Backfit Program can be expanded to more than 10 Poseidon SSBNs if the Soviet ASW threat increases significantly in the outyears.]

Studies are in progress concerning East Coast basing for Trident SSBNs and for Poseidon SSBNs backfitted with the Trident I missile. Owing to the 1976 Treaty of Friendship and Cooperation with Spain, which requires the relocation of our Rota-based SSBNs by July 1979, coupled with the backfit of Trident I missiles into selected Poseidon submarines, new basing requirements are imposed upon us. The submarine base under construction at Bangor, Washington as currently programmed can support only ten Trident submarines. Consequently, as the program proceeds beyond ten submarines, a decision must be made either to expand the Bangor facility or to construct Trident submarine support facilities on the East Coast. The military ocean Terminal at Kings Bay, Georgia, currently maintained in an inactive status by the Army has been identified as the preferred location for possible construction of an alternative East Coast refit site.

The MK-500 Evader reentry vehicle concept, which is being developed as a hedge against future ABM threats, has been successfully proved in flight tests on Minuteman I boosters and will be flight tested for compatibility with Trident I missiles during FY 1978

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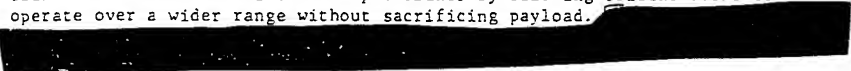
The option to place this reentry vehicle into engineering development will be maintained should we need to counter new Soviet initiatives in ABM deployment, but no such effort is now planned.

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Trident II Missile

We are again this year requesting a modest level of funding for initiation of a Trident II concept formulation effort. In addition to providing a hedge against uncertainties in the MX development program, Trident II, with a capability against the full spectrum of Soviet targets, is a required option if we are to have a balanced Triad capability. This new missile will effectively utilize the full volume of the Trident SSBN missile tube and, with potential accuracy improvements resulting from the Improved Accuracy Program, could provide a reentry vehicle which has an excellent CEP, but is not targetable and could not be put in jeopardy by the Soviet ICBM force. In addition, Trident II's increased payload at longer ranges would blunt the threat of Soviet ASW improvements by allowing Trident SSBNs to operate over a wider range without sacrificing payload.



Improved Accuracy Program (IAP)

The objective of this technology assessment program is to develop the ability to predict with confidence the costs and schedules associated with achieving militarily significant accuracy improvements in future submarine launched missile systems. Concepts generated will provide information for an engineering development program; however, no tactical hardware is to be produced. The end product will determine the feasibility and associated costs of a hard target option for Trident II and the potential for an incremental accuracy improvement in Trident I. The major elements of this program are instrumentation and collection of data on missile firings using the Global Positioning Satellite System, error analysis and modeling, research into improved guidance components including testing of improved accelerometers and stellar sensors, and an assessment of terminal sensor technology.

SSBN Subsystem Technology

The Trident submarine is believed to be the most cost-effective design for SLBM forces within the constraints of available technology; however, the search for new technologies must continue. The SSBN Subsystem Technology Program stresses development of new designs for more cost-effective SSBN subsystems. This long range program will allow cost-effective subsystem designs to be initiated in advance of development of a future SSBN, thereby minimizing formulation of subsystem designs on a crash basis. A reduction in costs and in the time span from concept formulation to development of a totally new SSBN system should be the benefit to flow from this program.

(3) Bombers

The bomber forces [projected through FY 1982 in Appendix Table 2] are essentially the same as those presented in the Defense Report last year. This is the case because we continue to believe that a bomber force of this

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size with its unique characteristics can effectively contribute to maintaining credible warfighting capabilities, and thus high confidence in deterrence of nuclear war. The programmed forces, particularly with procurement of the B-1 bomber and introduction of the Air-Launched Cruise Missile (ALCM), have been structured to provide high levels of effectiveness against the sophisticated Soviet air defenses that we expect to see deployed in the outyear planning period.

B-52s/KC-135s

Several programs involving the current B-52 bomber and KC-135 tanker force are continuing or will have been recently completed by the beginning of FY 1978.

The reduction in bomber and tanker crew ratios to the level of about 1.3 crews for unit equipped (UE) bombers and tankers will be complete by FY 1978. This crew ratio will allow us to keep about 30 percent of our bombers on routine alert. This is the minimum that will ensure generation of the full bomber force in a short period of time. This alert policy results from an assessment that a Soviet attack "out of the blue" is unlikely under current circumstances.

The structural modifications on the 80 B-52D aircraft to extend their service life into the 1980s have been completed.

[REDACTED]

The transfer of 128 UE KC-135 tankers from the active forces to the Air Reserve Components is continuing. This program has been accelerated slightly to adjust the transfer schedule to the ability of the Air Reserve Components to accept these aircraft. Thus, by the end of FY 1977 we plan to have 12 squadrons of 8 UE aircraft each activated instead of the nine squadrons originally planned. The remaining four squadrons will be activated in the Air Reserve Components during FY 1978, completing the transfer of all 128 KC-135s.

B-1 Bomber

The need to modernize our strategic bomber force continues to be acute. It is now clear that the level and sophistication of the Soviet threat continues to increase and that the SAL agreements place a heavy burden on the U.S. bomber force in terms of maintaining strategic equivalence. Bombers currently carry over 50 percent of U.S. strategic nuclear megatonnage and about 30 percent of U.S. strategic nuclear warheads. The B-1 will satisfy our modernization requirement and provide a significant increase in U.S. retaliatory capability to help maintain our nuclear deterrent. In addition, in a recent reassessment of the cost-effectiveness of bomber force modernization alternatives, it was found that the B-1 continues to be the most cost-effective

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alternative for carrying out the bomber force mission.

The FY 1977 budget requested funding for the procurement of the first three production aircraft. Initiation of production was to occur in late CY 1976 if the Department was satisfied that the B-1 bomber would perform as expected. Based on the results of: (1) the successful flight test program in which the first three development aircraft have accumulated over 440 hours of flying time and fully demonstrated the B-1's operational capability; (2) the evaluation and recommendation of the Defense System Acquisition Review Council (DSARC); and (3) the assessment and recommendations of several independent ad hoc review committees, the Department concluded that the B-1 was ready for production and formally approved production this past December. The B-1 production effort has been structured so as to be in compliance with the FY 1977 Defense Appropriations Act. The Department provided for the extension to 30 June 1977 of a phased funding arrangement of the procurement contract to permit orderly review of the B-1 program.

By any measure, the B-1 has had more preproduction testing than any previous military aircraft. To ensure the structural soundness of the aircraft, the static test program included both component and assembled airframe tests. Fatigue testing to two lifetimes has been completed and will eventually total four lifetimes. In contrast, the F-15 had one lifetime of fatigue testing at the production point, and structural fatigue testing of the B-52 did not begin until well after deliveries to Air Force operational units. Wind tunnel testing, underway for five years, has already exceeded that of any other military aircraft before its first flight. Offensive avionics, modified off-the-shelf equipment from other programs, has undergone three years of laboratory testing. The navigation equipment has had a year of flight testing aboard a C-141 test bed and has been successfully demonstrated in the B-1 since April 1976. The B-1 engines have been tested since 1971, accumulating over 13,000 hours of operation, and have completed all design reviews.

The FY 1978 budget request contains \$443 million for continued research and development and \$1,711 million for procurement of eight production aircraft. The FY 1979 authorization request contains funding for procurement of the next nineteen aircraft. This procurement level will allow a build-up over the FY 1978-83 period to a production rate of four B-1s per month.

Short Range Attack Missile (SRAM)

We are continuing with the development and testing of a new SRAM motor to replace the original SRAM motors which were designed for a five-year service life. Although the replacement of the original motors was expected to start as early as FY 1977, on-going motor surveillance testing has revealed no significant deterioration in the motor propellant. Thus, the original motors may not require replacement until FY 1980. The budget requests \$12.2 million in FY 1978 and \$5.2 million in FY 1979 to continue this development program. The B-1 SRAM program would be phased to correspond to programmed

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B-1 aircraft deployments. Thus, deliveries of the new SRAM would start in FY 1981 with the deliveries of the first UE B-1s. About \$122 million is requested in FY 1979 for the initial procurement of SRAM.

(4) Cruise Missiles

The Air-Launched Cruise Missile (ALCM) and the Sea-Launched Cruise Missile, now called the Tomahawk, are continuing in development. At the forthcoming DSARC, early this year, the Department will be considering whether or not to move into full-scale development with either one or both programs. The basic difference between the two missiles is in the airframe, which is optimized in each case for different launch platforms. Continuing stress on maximum commonality in high cost components -- the engine, navigation guidance package and warhead may warrant keeping both programs on line.

ALCM

The ALCM is being designed for both internal and external carriage on the B-52 and internal carriage on the B-1. Employment of the ALCM from B-52s will provide a cost-effective solution to maintaining the capability of these aircraft during the mid-1980s when the Soviet air defenses are projected to increase. This employment of the B-52s, and the necessity for a bomber with the B-1's advanced capabilities, form the basis for the judgment that the future bomber force should consist of some bombers which can penetrate the heaviest Soviet air defenses to destroy well-defended targets with SRAMs, and other bombers which can launch ALCMs from inside and outside Soviet air defenses against targets that are not so heavily defended. Thus, if the recommendation of the next DSARC is to proceed with full-scale development, and the development program proves successful, initial procurement of ALCMs could begin in FY 1979 (leading to an FY 1980 IOC.) The FY 1978 budget requests \$124 million for continued research and development and \$41 million for initial long lead procurement funding.

Tomahawk

The wide variety of applications of the Tomahawk cruise missile have already been discussed in Section I. As discussed there, nuclear armed Tomahawk could be deployed at sea or on mobile land launchers; in either mode it would have a high degree of pre-launch survivability and would provide an all-weather delivery capability which has excellent collateral damage control characteristics. The FY 1978 budget requests \$234 million for research and development for the Tomahawk. Initial procurement is expected to begin in FY 1979. Initial operational capability is scheduled for FY 1980.

2. Strategic Defensive Forces and Programs

a. The Basis for the Programs

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The focus of U.S. strategic defensive programs is on those capabilities which are most effective,, based on the overall threat and our strategic policies, rather than on "mirror-image" matching of Soviet defensive programs. In designing U.S. programs, the major defensive issues to be addressed are how to:

- modernize the aging U.S. strategic air defense forces;
- hedge against such potential instabilities as Soviet abrogation of the ABM Treaty, or technological breakthroughs in ballistic missile defense;
- ensure the continued effectiveness of U.S. bomber, missile, and space warning and attack assessment systems in an era of increasingly sophisticated offensive threats;
- structure the U.S. Space Defense program to reflect the increasing importance of space to national security; and
- improve the Civil Defense program to enhance U.S. nuclear attack preparedness and post-attack recovery posture.

Modernization of Defenses

Although current U.S. strategic policy does not emphasize active defense of the Continental United States (CONUS) against massive nuclear attack, we do maintain a limited active strategic air defense capability so as to:

- maintain peacetime CONUS air space sovereignty,
- deny any intruder unchallenged access to CONUS air space in times of crises, and
- retain an option to deploy a dedicated air defense force to defend U.S. interests or forces in foreign theaters against air attack.

The forces currently available, which are the remnants of the large CONUS bomber defense force deployed in the 1950s and 1960s to defend the U.S. against a large Soviet bomber attack, are not cost-effective in carrying out these limited missions. To remedy this situation, the plan is to deploy a follow-on-interceptor to replace the aging Active F-106 interceptor force. Also, the Joint Surveillance System (JSS) program will continue; it will modernize the outdated surveillance and air defense command and control network.

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Hedging Against BMD Instabilities

A primary uncertainty in the strategic defensive area which could seriously jeopardize strategic stability pertains to ballistic missile defense (BMD). As the Soviets continue their substantial BMD R&D program, we must do likewise to encourage Soviet compliance with the ABM Treaty, protect our technological lead in BMD, and guard against their unilaterally achieving technical breakthroughs. Accordingly, we plan to continue a carefully structured BMD R&D program of two complementary efforts -- an Advanced Technology program and a Systems Technology program.

Enhanced Effectiveness for Warning and Surveillance Systems

Improving U.S. tactical warning and assessment capabilities is important in light of continued Soviet improvements in strategic offensive capabilities, if we are to prevent the creation of a "hair trigger" on our strategic offensive forces. The major programs to do this are:

-- the CONUS Over-the-Horizon Backscatter (OTH-B) radar program, the Distant Early Warning (DEWLINE) enhancement program, the Alaskan radar net modernization program, and surveillance radars of the JSS to improve the bomber warning system;

-- the Pave Paws (SLBM phased array) radar program to improve warning against SLBM attacks on eastern and western trajectories;

-- the BMEWS upgrade program and incorporation of PAR into our ICBM attack characterization net to improve warning and attack assessment capabilities against ICBM attack;

-- the Ground Electro-optical Deep Space Surveillance System (GEODSS) sensor program and the Spacetrack Pacific enhancement program to improve U.S. space surveillance capabilities.

Space Defense

Space-based systems offer many inherent advantages over ground or air-based systems and, as space technology matures, these systems will undoubtedly play an increasing role in support of U.S. and Soviet military operations. As military dependence on space grows, the loss of key space systems could materially influence the outcome of future conflicts. Space has thus far been a relative sanctuary, but it may not remain so indefinitely. Accordingly, we have significantly increased U.S. space defense R&D and procurement programs to provide for an improved capability, should we need it, in certain key space defense areas. These areas include: ground and space-based satellite surveillance systems, satellite survivability programs

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Civil Defense

The U.S. Civil Defense program is designed primarily to enhance survival of the U.S. population in the event of a nuclear attack. Improving current civil defense capability, essentially the product of the national fallout shelter program of the 1960s, requires that we update and improve the national fallout protection capability, accelerate contingency planning to develop an option for population relocation in a crisis, and enhance National readiness to respond to nuclear crisis situations.

b. Force and Program Status

A detailed listing of strategic defensive forces is shown in Appendix Table 2. There are no major changes in force levels over the program period. Acquisition costs of major defensive force modernization and improvement programs were listed previously in Table I-1. Highlights of the major defensive programs are discussed below.

(1) Air Defense and Warning

Last year it was proposed that the Air National Guard (ANG) F-101 interceptor force (four squadrons) be phased out by the end of FY 1977, with the planned conversion of the ANG units affected to F-4 aircraft. However, in view of our recent decision to increase tactical air power in Europe by deploying additional F-111 forces to England and retaining additional F-4 units in Europe, we will retain three squadrons of F-101 aircraft in the ANG instead of converting them to F-4 aircraft. A fourth ANG F-101 unit at Hector Field, North Dakota, will still convert to F-4s this year as previously planned. This retention of ANG F-101s maintains the strategic air defense interceptor force at 16 squadrons: three ANG F-101 squadrons, six active F-106 squadrons, six ANG F-106 squadrons, and one ANG F-4 squadron. These interceptor forces, augmented by general purpose force F-4s, maintain peacetime alert aircraft at 26 sites around the periphery of the 48 contiguous states to ensure the sovereignty of U.S. air space. In addition, the Army continues to maintain Nike-Hercules and Hawk batteries in Florida. In times of crisis, additional general purpose aircraft from the Air Force, Navy and Marine Corps are tasked to augment dedicated CONUS air defense forces.

An active air defense interceptor squadron equipped with F-4s is based in Iceland, and the F-4 equipped Hawaii ANG tactical fighter squadron performs an air defense mission. Additionally, in Alaska we maintain one active Air Force F-4 squadron, which performs an air defense mission in addition to its tactical role, and three Army Nike-Hercules batteries.

The present Air Force airborne radar surveillance force is comprised of ten Air Force Reserve EC-121s manned by Active and Reserve crews.

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These aircraft currently provide radar surveillance over the critical Greenland, Iceland, United Kingdom (GI/UK) Gap. This force must be maintained in being until early FY 1979 when the E-3A AWACS will be able to assume the mission.

Follow-on Interceptor (FOI)

Normal attrition will reduce the number of available F-106 aircraft below the level required to maintain a dedicated strategic air defense force beginning in the early 1980s. Accordingly, the Department tentatively plans to deploy an interceptor version of one of our newest fighters as a follow-on interceptor (FOI) to replace the aging F-106s in our active interceptor force.

Although we have decided to defer FOI aircraft selection based on uncertainty concerning our future air defense requirements and sensitivity of candidate aircraft (F-14, F-15, or F-16) to mission requirements, we have included \$26 million in the FY 1978 budget request to retain the option to deploy FOIs beginning in FY 1980.

Joint-Surveillance System (JSS)

We are requesting \$11 million for this program in FY 1978. As mentioned last year, the CONUS surveillance element of the JSS will consist of 48 long-range surveillance radar sites: 43 sites will be operated and maintained by the FAA, but the radar data will be jointly used by the FAA and Air Force. The remaining five sites in CONUS will be under Air Force control. In Alaska there will be 14 sites: 12 Air Force, one jointly-used Air Force site, and one jointly-used FAA site. Minimally attended radars will be developed and procured in the early 1980s to replace the current obsolete Alaskan surveillance radar system. Final conversion of the surveillance element of the JSS should be completed in 1980.

Agreement has been reached that the control element of the JSS will consist of four Regional Operations Control Centers (ROCCs) in CONUS, one in Alaska, and two in Canada. These centers will provide the command and control function required for the peacetime air space sovereignty mission and will replace the six costly and outdated Semi-Automatic Ground Environment (SAGE) centers in CONUS and Canada and the Manual Control Center (MCC) in Alaska. Annual savings in excess of \$100 million and 5,000 personnel should result from this modernization of the strategic air defense command and control system. AWACS aircraft from the general purpose AWACS force will be available to augment the ROCCs and provide CONUS with a survivable wartime air defense command and control system. Final deployment of the ROCC element of the JSS will extend into 1981.

CONUS Over-the-Horizon Backscatter (OTH-B Radar)

Last year I discussed the OTH-B limited coverage prototype radar being constructed in Maine. This technology has shown promise for meeting our future long range bomber warning needs. However, during the past year cost and schedule problems have required our slowing down the

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planned efforts. After a thorough evaluation is made, a decision on the future course of action will be forthcoming. In the interim, the program will be funded at a \$2 million level for FY 1978.

Distant Early Warning (DEWLINE) Radars

We are requesting \$1 million in FY 1978 to initiate development of an Enhanced Distant Early Warning (EDEW) line that would correct deficiencies in low altitude coverage of the northern bomber approaches to CONUS. Use of an OTH-B radar to cover the northern bomber approaches does not appear feasible owing to the inability of such radars to operate effectively in the auroral zones of the Arctic atmosphere. Current planning envisions replacing the existing DEW radars with unattended automatic radars, along with the addition of Gapfiller sites, [REDACTED] Initial deployment is planned for the early 1980s.

(2) Ballistic Missile Defense (BMD) and Warning

This fall will mark the fifth anniversary of the ratification of the ABM Treaty which restricts the deployment of Ballistic Missile Defenses. During this period, the nature of the U.S. BMD program and its funding have changed markedly. In 1972, the Department was in the midst of the system development and deployment of the Safeguard system; advanced R&D efforts -- the Site Defense Prototype Demonstration Program and R&D on Advanced Technology -- were primarily concentrated on near-term improvements. Since, the Safeguard system has been terminated and deactivated (except for the Perimeter Acquisition Radar (PAR) which will be transferred to the Air Force for use as an ICBM warning/attack characterization we have reoriented R&D efforts to focus on more advanced concepts and technologies. BMD funding, excluding costs of operation of the Kwajalein Missile Range which is a national range, has been reduced from a peak of \$1.4 billion in FY 1971 to the requested amount of \$215 million in FY 1978.

During the course of the past five years, however, there has not been a corresponding downturn in the scope of the Soviet efforts in strategic defense. They continue to operate the Moscow ABM system and to conduct a substantial BMD R&D program. Given these realities, I do not believe it is prudent, especially as we approach the review of the ABM Treaty scheduled to begin this fall, to reduce further the U.S. effort in BMD R&D. Rather, as I have indicated, I believe it is time to give U.S. strategic defense programs increased priority. Until we do so, the magnitude of the Soviet effort will inexorably erode our technological advantage. Thus, we are requesting a small increase in the FY 1978 level of effort for BMD R&D. We must maintain the technological lead in this area and we must hedge against future strategic uncertainties posed not only by the continuing growth of the Soviet threat but also by the danger of the nuclear weapons capabilities proliferating to other countries.

Advanced Technology

The advanced Technology Program is a broad R&D effort to advance

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the state-of-the-art of BMD components, improve our understanding of BMD phenomenology, and investigate the feasibility of new, potentially important defensive concepts and technologies. A principal objective of this program is to maintain a technological lead in BMD over the Soviet Union. To achieve this, the program maintains a search for new ideas and conducts additional research to determine the feasibility of the most promising ideas.

Major research efforts are conducted in the areas of interceptor missiles, radar and optical sensors, data processing and those aspects of physical sciences that involve missile defense phenomena. Key field experiments continue to be a necessary part of this program. These efforts are designed to yield both major improvements in the performance of BMD components and new capabilities, [redacted] New approaches to ballistic missile defense [redacted]

[redacted] are receiving increasing emphasis in the program's search for revolutionary concepts and ideas which could yield technical breakthroughs. If and when such breakthroughs are achieved, it is necessary that we find them first and not be caught unaware.

Systems Technology

The Systems Technology Program addresses the system feasibility of a variety of possible defense missions. This is accomplished by system definition, technological development, integration of the necessary components, and test and evaluation of hardware against targets at the Kwajalein Missile Range in order to resolve critical system issues related to the terminal, midcourse, and low altitude defense regimes. In so doing, this program ensures that technological advances can be realized in a working system.

The primary objective of the Systems Technology program is to provide a hedge against future strategic uncertainties by maintaining the capacity to develop and deploy expeditiously a BMD system for any of a number of possible future roles. The program is designed to continue to update the technological content of BMD system options by incorporating technological advances initially developed in the Advanced Technology Program so as to provide the most advanced and most effective system options at any given future time.

A major task in the program effort for FY 1978 will be to complete integration and checkout of test facilities -- systems technology radar, data processor, and associated software -- at Kwajalein Missile Range and to initiate tests with these against Air Force targets (Minuteman and Titan) to resolve the critical terminal defense system issues. [redacted]

[redacted] These represent high payoff technologies now ready for transfer from the Advanced

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Technology Program. Integrated field testing of these is planned for FY 1979 and FY 1980, making use of the terminal defense test facilities being completed in FY 1978.

ICBM Warning Systems

We plan to continue our policy of covering all relevant strategic missile launch areas with at least two different types of warning sensors (sensing different phenomena). Reliance will continue on the [redacted] early warning satellite system and the Ballistic Missile Early Warning System (BMEWS) radars for warning of ICBM attacks. In addition, the Perimeter Acquisition Radar (PAR) will remain operational in support of the NORAD attack assessment mission.

Two major improvement programs are under way or planned to ensure continued effectiveness of our ICBM warning systems. First, [redacted] will permit greater survivability and operational flexibility for the processing and dissemination of satellite early warning information. Funds will be requested in future budgets [redacted]. Second, resolution improvements and upgrades for the BMEWS radars will enhance system reliability. We are requesting \$13 million in FY 1978 for these BMEWS improvement programs.

SLBM Warning Systems

The Pave Paws coastal-based phased-array radar program is progressing on schedule. Deployment of these two radars will permit phase-out of the six obsolete 474N SLBM warning radars now in operation, and will complement [redacted] satellites to provide reliable full coverage warning of any SLBM attacks. The \$7 million requested in FY 1978 will allow continued deployment of this system.

(3) Space Defense

The rapid advances of space technology in the last several years have resulted in a greatly expanded role for space-based systems in direct support of U.S. and Soviet military operations. Space-based systems offer many advantages over ground- or air-based systems; we can expect this trend toward the effective integration of space systems into military combat operations to continue, and [redacted] space capabilities to become increasingly important to the effective use of military forces.

U.S. satellite systems currently provide early warning of missile attack, furnish position updates to our SSBN force, provide vital weather [redacted] and play a major role in our worldwide military command and control system. We anticipate that many new capabilities will be provided by space-based systems in the future. For example, in the early 1980s, the NAVSTAR Global Positioning Satellite system will provide upgraded navigation accuracy to a wide range of U.S.

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military systems [REDACTED]

The Soviets appear to be growing more dependent on satellite systems for tactical support. This is illustrated by the Soviet use of radar ocean surveillance [REDACTED] satellites which provide them with a unique worldwide operational capability to locate major U.S. naval surface combatants. [REDACTED]

Current U.S. space defense policy is to abide by our space treaties, exercise our rights to the full and free access to space, and limit our use of space to nonaggressive purposes. It is absolutely vital, however, that we remain alert to Soviet activities and technological advances in space capabilities which could some day materially influence the outcome of a future conflict.

The resurgence of Soviet antisatellite test activity this past year, [REDACTED]

[REDACTED] indicate that the Soviets have undertaken a broad-based program to develop the capability to [REDACTED] to interfere with the operation of our satellites at all altitudes.

Space has thus far been a relative sanctuary, but it will not remain so indefinitely. The Soviets could use their antisatellite capability during a crisis or conflict to deny us the use of a vital element in our total military system.

Accordingly, we have decided to increase significantly the U.S. space defense effort over a broad range of space-related activities which include space surveillance, satellite system survivability [and attack] and the related space operations control function. The \$107 million in FY 1978 [(\$1.6 billion for FY 1978-1982)] is directed at carrying out a broad-based RDT&E and procurement program which will improve our current capabilities [and create options to deploy important operational capabilities in the early 1980s, should the need arise.] Specifically, the Department's program:

- initiates prototype design of an LWIR (longwave infrared) space-based surveillance satellite [in FY 1981] so that deployment of this advanced satellite surveillance capability could begin in [FY 1985]; currently we must keep track of foreign nation satellites with a limited network of ground-based sensors;

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- incorporates satellite attack warning and impact sensors and provides survivability aids on U.S. satellites;
- initiates prototype non-nuclear antisatellite flights in FY 1980 and maintains an option for an FY 1983 antisatellite IOC;
- provides for an improved space operations command and control facility; and
- increases the level of effort on a large number of smaller space defense RDT&E programs.

This expanded space defense program will signal our commitment to protect U.S. space-based assets and ensure that the U.S. has the capability to operate effectively in a hostile space environment.

(4) Civil Defense

The Civil Defense program is an element of the U.S. deterrent posture. It is sized and structured to enhance the survival and recovery of the United States, should deterrence fail, by increasing the percentage of the U.S. population that would survive in the event of a nuclear war. The program should provide a "surge" capability for relocation of the population from areas near military bases and large cities in time of crises and nationwide fallout protection for people at their present location and for those who might be relocated.

We are requesting \$90 million for Civil Defense in the FY 1978 budget. Increased funding will be applied to improve the national fallout protection posture and to speed the development of plans for crisis relocation of U.S. population. In developing these complementary capabilities, we continue to emphasize programs and plans that involve modest peacetime costs, but which could be "surged" in time of crisis to provide an effective national civil defense capability. [At the requested level of effort, a thorough nationwide crisis relocation plan is expected to be completed by the mid-1980s, with an initial capability for crisis evacuation expected by about 1980.]

At the State and local level, we continue to support the preparedness base upon which we would build in time of crisis. Under the authority of the Federal Civil Defense Act of 1950, civil defense assistance must continue to focus primary attention on preparing for an enemy attack upon the United States. However, Federal assistance to State and local governments for emergency preparedness may include activities relating to readiness to deal with peacetime disasters when the facts demonstrate that such assistance benefits both attack and peacetime preparedness objectives.

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3. Strategic Command, Control and Communications

a. The Basis for the Programs

The strategic command, control and communications (C³) system, which consists of dedicated systems, such as the worldwide fleet of Airborne Command Post and Tacamo aircraft, and which makes use of multi-purpose systems, such as Autodin, VLF/LF and satellite communications, is the central core of DoD's total C³ system. The total C³ system will be described in detail in Chapter V, but there are some specific concerns with strategic C³ that should be considered separately. The basic issues for strategic C³ are how to:

-- ensure that sufficient parts of the system will survive an attack directed against them to permit the President to communicate to U.S. forces his decision to execute or terminate retaliatory strikes; and

-- maintain a flexible, operational capability if the system is not directly attacked.

A complementary issue, that cannot be resolved using our strategic C3 system, but yet must be dealt with, is how to:

-- maintain constant communication with the Soviet leadership if the C³ system is not directly attacked.

Execution of Retaliatory Strikes

To permit the President's decision to execute a general nuclear attack option to be communicated to the strategic offensive forces, even when the C³ system itself has been attacked, we have developed plans which call for a number of command centers, fixed and mobile, with redundant communications from these centers to the forces.

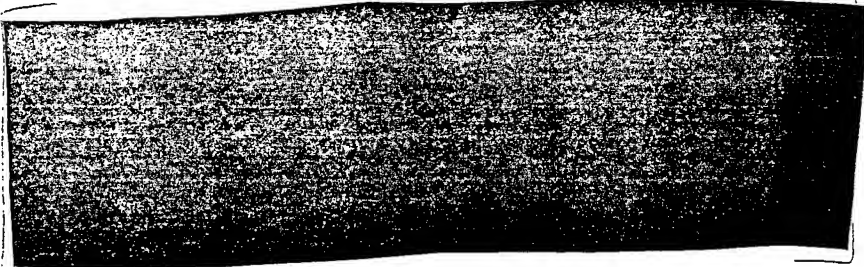
The National Military Command System (NMCS) is the centerpiece of these plans. It consists of the National Military Command Center (a soft facility) in the Pentagon, the Alternate National Military Command Center (ANMCC, moderately hard facility), and the National Emergency Airborne Command Post (NEACP). Of the three, only the NEACP, if airborne, can be expected to survive a nuclear attack directed at our C³ systems. Moreover, since the NEACP has multiple path, multiple frequency communications to the strategic nuclear forces, its vulnerability to jamming and nuclear weapon effects is low. In addition, CINCSAC, CINCEUR, CINCLANT, and CINCPAC have both fixed and airborne command posts capable of communicating with the nuclear forces, [REDACTED]

While the present C³ system can support the President in his control of the strategic forces, the threat of direct attack and jamming are projected to increase and several programs are under way to meet these threats.

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There are four continuing programs which were reported last year. These are the Advanced Airborne Command Post (AABNCP), the Air Force Satellite Communication System (AFSATCOM), the Extremely Low Frequency (ELF) System and the Tacamo Improvement Program.



Maintenance of Operational Capability

The present, redundant C³ system is estimated to be capable of providing for flexible use of the strategic (and other) forces if the C³ system is not directly attacked. Some of the projected improvements mentioned above, such as AFSATCOM, plus other improvements to the overall C³ systems, such as the Defense Satellite Communications System, will further enhance this capability.

Communication with Adversary Leadership

Maintaining continuous communication with Soviet leadership may clarify confusing events or provide a channel for negotiations and the control of escalation. This vital communications capability is provided by a number of teletype terminals in different locations with multiple paths to the USSR. This is generally referred to as the MOLINK (Washington-Moscow link). To assure that the system is always operational, there is a one-way check every hour on an alternating basis. The system is not designed to survive a direct attack.

The MOLINK system is supported by the Defense Department as part of its communications support to the President, although it is not part of the strategic C³ system. The status of strategic C³ systems and programs is covered in Chapter V, Command, Control, Communications.

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